We Claim:

1. An optical encoder comprising:

light emitting means for generating light;

a raster for modulating said generated light, said raster comprising a plurality of periodically positioned first and second formations, said first formations being opaque and said second formations being transparent, and said raster being attached to a moving element;

light detection means for detecting light modulated by said raster, said light detection means comprising at least one set of three light detecting elements having light receiving areas being positioned in parallel to said raster, said elements generating an output responsive to detected light; and

evaluating means electrically coupled to said detecting elements, said evaluating means comprising evaluating elements for receiving said detecting means output and generating an evaluating means output indicative of speed and direction of moving element.

2. The optical encoder according to claim 1, wherein said light detecting elements each comprise at least one light receiving area, said light receiving areas being positioned in parallel to said raster and said light detecting elements cover a combined length of one half to one period of said raster.

3. The optical encoder according to claim 2, wherein said combined length is approximately three quarters of the period of said raster.

4. The optical encoder according to claim 1, wherein said second formations comprise openings in said raster and said first and second formations are in parallel.

5. The optical encoder according to claim 1, wherein said light emitting means further comprise a plurality of optical waveguides having first and second ends, said first ends optically bundled to a light emitting source and said second ends positioned proximate to said raster.

6. The optical encoder according to claim 5, wherein said light emitting means comprises a light emitting diode and lens, whereby light from said diode is focused by said lens into said optical waveguides.

7. The optical encoder according to claim 5, wherein said light emitting means comprises a vertical resonator light emission installation.

8. The apparatus according to claim 1, wherein said light detecting means comprises a photodiode.

9. The apparatus according to claim 1, wherein said evaluating means output is at least one quadrature signal.

10. The apparatus according to claim 9, wherein said evaluating means comprises an evaluating circuit for generating said quadrature signal, said evaluating circuit comprising:

an adder having at least two adder inputs and one adder output, said adder adding input signals received at said two adder inputs and generating a signal and transmitting said signal along said adder output;

a divider electrically connected to said adder_output, said divider comprising at least one divider input and at least one divider output, said divider receiving said adder output, reducing said adder output by a factor, generating a divider output signal representative of said reduced adder output, and transmitting said divider output signal along said divider output; and

at least two comparators electrically connected to said divider, said comparators having two comparator inputs for receiving said divider output signal and a light detecting element output, and said comparators generating a first and a second quadrature signal.

11. The optical encoder according to claim 10, wherein said adding input signals are generated by a first and a third light detecting element and said light detecting element outputs received by said comparators are generated by said first and a second light detecting element.

12. The optical encoder according to claim 11, wherein output from said first light detecting element is inverse to output from said third light detecting element.

13. The optical encoder according to claim 12, wherein said divider has a dividing factor of 2.

14. The optical encoder according to claim 1, wherein the light detection means and evaluating means are semiconductor components built on a single substrate.

15. An optical encoder comprising:

light emitting means for generating light;

a raster for modulating said generated light, said raster comprising a plurality of first and second formations, said first formations being opaque and said second formations being transparent, and said raster being attached to a moving element;

light detection means for detecting light modulated by said raster, said light detection means comprising at least one set of three light detecting elements, said elements generating an output responsive to detected light, each of said elements comprise at least one light receiving area, said light receiving areas being positioned in parallel to said raster and said light detecting elements cover a combined length of one half to one period of said raster; and

evaluating means electrically coupled to said detecting elements, said evaluating means comprising evaluating elements for receiving said detecting means output and generating an evaluating means output indicative of speed and direction of moving element.

16. The optical encoder according to claim 15, wherein said combined length is approximately three quarters of the period of said raster.

17. The optical encoder according to claim 15, wherein said evaluating means output is a quadrature signal.

18. The optical encoder according to claim 17, wherein said evaluating means comprises an evaluating circuit for generating said quadrature signal, said evaluating circuit comprising:

an adder having at least two adder inputs and one adder output, said adder adding input signals received at said two adder inputs and generating a signal and transmitting said signal along said adder output;

a divider electrically connected to said adder output, said divider comprising at least one divider input and at least one divider output, said divider receiving said adder output, reducing said adder output by a factor, generating a divider output signal representative of said reduced adder output, and transmitting said divider output signal along said divider output; and

at least two comparators electrically connected to said divider, said comparators having two comparator inputs for receiving said divider output signal and a light detecting element output, and said comparators generating a first and a second quadrature signal.

19. The optical encoder according to claim 18, wherein said adding input signals are generated by a first and a third light detecting element and said light detecting element outputs received by said comparators are generated by said first and a second light detecting element.

20. The optical encoder according to claim 19, wherein output from a first light detecting element is inverse to output from a third light detecting element.

21. The optical encoder according to claim 20, wherein said divider has a dividing factor of 2.

22. The optical encoder according to claim 18, wherein the light detection means and evaluating means are semiconductor components built on a single substrate.